



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,894	11/26/2003	Prathyusha K. Salla	132958XX-C/YOD GEMS:0263	1160
68174	7590	02/21/2008	EXAMINER	
GE HEALTHCARE c/o FLETCHER YODER, PC P.O. BOX 692289 HOUSTON, TX 77269-2289			MEHTA, PARIKHA SOLANKI	
			ART UNIT	PAPER NUMBER
			3737	
			MAIL DATE	DELIVERY MODE
			02/21/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/723,894	<b>Applicant(s)</b> SALLA ET AL.	
	<b>Examiner</b> PARIKHA S. MEHTA	<b>Art Unit</b> 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, filed 28 December 2007, with respect to claims 1-32 have been fully considered and are persuasive with respect to claims 25-32. The rejection of claims 25-32 under 35 U.S.C. 102(b) in view of Larson (US PG Pubs. No. 2004/0155653) has been withdrawn, and accordingly prosecution of the present application is hereby reopened. However, upon further consideration, new grounds of rejection of claims 25-32 are made under 35 U.S.C. 103(a) in view of Larson ('653) and Rogers (US Patent No. 5,477,144), as presented in further detail herein.

In regards to Applicant's arguments presented for claims 1-24, The Office maintains the interpretation of the word "sensor," as recited by the instant claims, to include imaging sensors, as this is consistent with the broadest reasonable interpretation of the term (*sensor: a device that responds to a physical stimulus (as heat, light, sound, pressure, magnetism, or a particular motion) and transmits a resulting impulse (as for measurement or operating a control)*). Source: Merriam Webster <http://www.m-w.com> ). In order to limit the interpretation of the word "sensor" as only including those described in the specification, the specification must explicitly state that the present application redefines "sensor" to exclude imaging sensors. It has previously been held that, when a patentee acts as his own lexicographer in redefining the meaning of particular claim terms away from their ordinary meaning, he must clearly express that intent in the written description (see for precedent *Merck & Co., Inc., v. Teva Pharms. USA, Inc.*, 395 F.3d 1364, 1370, 73 USPQ2d 1641, 1646 Fed. Cir. 2005). See also MPEP 2111.02 IV.

### *Double Patenting*

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

Art Unit: 3737

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 and 17-24 of copending Application No. 10/723,857. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the instant application are merely broader than those of the co-pending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4. Claims 17-32 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 17-32 of copending Application No. 10/723,857, in view of Rogers (US Patent No. 5,477,144). Although the conflicting claims are not identical, they are not patentably distinct from each other. Claims 17-32 of the co-pending application recite all limitations of claims 17-32 of the present invention, with the exception of specifying that the imager is an MR system and that the non-electrical sensor(s) is used to acquire cardiac motion data. In the same field of endeavor, Rogers ('144) teaches a system and method for retrospectively-gated cardiac MR imaging, using non-electrical sensors to acquire cardiac motion data (col. 5 lines 53-63). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system and methods of the co-pending application to employ an MR imager and non-electrical cardiac sensors, in order to eliminate interference between the magnetic field and the sensors, in view of the teachings of Rogers ('144).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for

Art Unit: 3737

patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Larson (US PG Pubs. No. 2004/0155653). Larson ('653) discloses a method and system for gated cardiac MR imaging in which the images are synchronized to the beating of the heart or respiration of the lungs, equivalent to the two or more organs claimed in the instant application, wherein the image data and motion data are acquired substantially simultaneously (Figs. 1, 6 & 7, Abstract, ¶ [0044]). Larson ('653) states that the imaging data may be retrospectively synchronized to the cardiac motion data, and that the method may be performed over a single breath hold (¶ [0010], (¶ [0051], Fig. 6). The MR imaging data of Larson ('653) is equivalent to both the image data and motion data claimed in the method and system of the instant application (¶ [0010]). The MR imaging system disclosed by Larson ('653) is equivalent to an electrical sensor, and the start and end times of the single breath hold are equivalent to the two retrospective gating points (¶ [0010]). Larson ('653) further discloses steps for reconstructing the image data from raw k-space data (¶ [0042]). Larson ('653) also states that "the extracted timing information may be processed to provide temporal correspondence with the motion... [t]he processing may comprise extracting a peak, phase, or rate of a time-varying signal" (¶ [0018]). Since the processed timing information is subsequently used to process the image data of Larson ('653), the peak, phase, and rate of a time-varying signal of the reference invention constitute motion compensation factors as claimed in the instant application.

Regarding the computer program and MR imaging system claimed in the instant application, Larson ('653) discloses using a conventional MR system to perform the retrospective cardiac image gating method (¶ [0053]). It is known that, in the state of the art at the time of invention, a conventional MR system included an imager, data acquisition circuitry for acquiring and processing motion image signals, system control circuitry for operating the imager, an operator workstation for communicating with the system control circuitry, a sensor-based motion measurement system as claimed in the instant application, and computer programs including routines for operating all of the above-noted components.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 3737

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 9-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larson (US PG Pubs. No. 2004/0155653) in view of Rogers (US Patent No. 5,477,144).

**Regarding claims 9-24**, Larson ('653) teaches all features of the present invention as described above in paragraph 7 of the instant Office Action. Larson ('653) further teaches that cardiac motion image data may be synchronized with respiratory motion data (§ [0063]). Larson ('653) does not provide non-electrical sensors for acquiring the cardiac motion image data.

In the same field of endeavor, Rogers ('144) provides a method and system for retrospectively-gated cardiac MR imaging with motion artifact correction, including the synchronization of respiratory motion data with cardiac motion data, as acquired by a pressure transducer, an acoustic microphone, a piezoelectric crystal transducer, all of which are non-electrical (col. 5 lines 53-63). Larson ('653) teaches that the use of cardiac motion sensors other than an ECG during imaging is desirable, because it avoids the problem of interference between the cardiac motion sensors and the magnetic field of the MR imaging system (§ [0003], § [0013]). In light of the motivation provided by Larson ('653), it would have been obvious to one of ordinary skill in the art at the time of invention to modify the method and system of Larson ('653) to substitute the non-electrical cardiac motion sensors provided by Rogers ('144).

**Regarding claims 25-32**, the combination of Larson ('643) and Rogers ('144) as applied to claims 9-24 would yield the claimed invention having both electrical and non-electrical cardiac motion sensors if the sensors of Rogers ('144) were included with, instead of substituted for, the sensors of Larson ('643). It would have been obvious to one of ordinary skill in the art at the time of invention to augment the system and method of Larson ('643) by adding the non-electrical sensors of Rogers ('144) in order to obtain additional motion data to confirm the results obtained by the electrical sensors of Larson ('643).

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Epstein et al (US Patent No. 5,997,883), Spraggins et al (US Patent No. 4,961,426), Stergiopoulos et al (US PG Pubs. No. 2004/0102695) and Hedlund et al (US PG Pubs. No. 2002/015671) teach related methods and systems for acquiring and gating cardiac MR data to correct for organ motion artifact.

Art Unit: 3737

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PARIKHA S. MEHTA whose telephone number is (571)272-3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Parikha S Mehta/

Examiner, Art Unit 3737

/Brian L Casler/

Supervisory Patent Examiner, Art Unit 3737